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EXAMINER

ART UNIT

PAPER NUMBER

1102

DATE MAILED: 08/23/95

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS This application has been examined Responsive to communication filed on _____ This action is made final.A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133**Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:**

1. Notice of References Cited by Examiner, PTO-892.
2. Notice of Draftsman's Patent Drawing Review, PTO-948.
3. Notice of Art Cited by Applicant, PTO-1449.
4. Notice of Informal Patent Application, PTO-152.
5. Information on How to Effect Drawing Changes, PTO-1474..
6. _____

Part II SUMMARY OF ACTION1. Claims 1 - 33 are pending in the application.

Of the above, claims _____ are withdrawn from consideration.

2. Claims _____ have been cancelled.3. Claims _____ are allowed.4. Claims 1 - 33 are rejected.5. Claims _____ are objected to.6. Claims _____ are subject to restriction or election requirement.7. This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.8. Formal drawings are required in response to this Office action.9. The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are acceptable; not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).10. The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been approved by the examiner; disapproved by the examiner (see explanation).11. The proposed drawing correction, filed _____, has been approved; disapproved (see explanation).12. Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has been received not been received been filed in parent application, serial no. _____; filed on _____.13. Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.14. Other

DRAWINGS APPROVED

EXAMINER'S ACTION

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Part III DETAILED ACTION

Specification

1. The following changes to the specification have been made by informal Examiner's amendment:

p. 1, l. 3: correct sp. of "provided" and "means"

p. 6, l. 5, 9, 14, 20, 24, 29, 33; and p. 7, l. 2, 5: delete "strage" insert --storage--.

p. 6, l. 7: correct sp. of "secondary"

p. 9, l. 15: delete "a" insert --an--

p. 11, l. 19: correct sp. of "memorizing"
p. 14, l. 19: *power for power*
p. 16, l. 21: delete "on" insert --or--

p. 19, l. 22: delete "mote" insert --mode--

p. 21, l. 1: delete second occurrence of cycle

p. 21, l. 22: delete "soundless" insert --soundness--

p. 22, l. 2, 5, 8, 11: correct sp. of "electric"

p. 23, l. 17: correct sp. of "Detecting"

p. 23, l. 18: correct sp. of "secondary"; delete "detect a" insert "detects"

p. 24, l. 19: delete "taking" insert --taken--

p. 25, l. 4: correct sp. of "battery"; delete "a" insert --an--

p. 25, l. 15: delete "efficiencys" insert --efficiency--

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2. The disclosure is objected to because of the following informalities:

page 11, line 3-4, the phrase "with understanding operating condition of the sarrounding the loads" is unclear;

page 21, line 8, "t%" is unclear.

Appropriate correction is required.

Claim Objections

3. Claims 1-33 objected to because of the following

informalities:

Words run together throughout the claims. In claim 3, "storage" misspelled at lines 5, 8 and 12; "secondary" misspelled at line 6. In claim 4 "storage" is misspelled at lines 5, 8 and 12. In claim 5 the phrase "a electric power strage units" is objected to; "storage" is misspelled at lines 5 and 7, "signalling for transmitting" is either a typo or indefinite. In claim 10, line 4, "or" (first occurrence) should be --of--. In claim 12, "storage" and "secondary" are misspelled. In claim 15, "memory" and "optimum" are misspelled. In claim 16, "discharging" is misspelled. In claims 17 and 20, "storage" is misspelled. In claim 20, "prior" and "of" are misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. Claims 1-33 rejected under 35 U.S.C. § 112, first and second paragraphs, as the claimed invention is not described in such full, clear, concise and exact terms as to enable any person skilled in the art to make and use the same, and/or for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the Figures, both elements 1 and 5 are "loads" which makes it impossible to understand the context of "said load" in the claims. In claim 1, for example, electric power of said secondary battery is discharged to "said load" regardless of the value of the residual electric power in the secondary battery --is this the same or different load? In claims 3 and 4 it is not clear what element is being referred to as a "power system."

5. Claims 1-33 rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

"Charge/discharge" used throughout the claims is indefinite because it is not clear whether this is an alternative expression.

In claim 1, the phrase "for transmitting information on said load and to said second battery to said control unit" is

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indefinite because it is not clear what information is transmitted (about which element), where it is transmitted from and where it is transmitted to;

In claims 1 and 19, "said power system" lacks antecedent basis and it is not clear where the power is discharged to. The preamble recites the entire combination as the "power system." (As noted above, the phrase has antecedent basis in claim 3, but it is still not clear what it is.)

In claims 2-5, 12, 17 "the predetermined value" lacks antecedent basis and is indefinite.

Claim 4 is a duplicate of claim 3.

In claim 12, "connectable" is indefinite.

In claims 22-25 "night period rate" electric power is indefinite. The price of the electric power is not patentable subject matter.

In claim 26, 28 "in a mode conforming to optimum discharge capacity" is indefinite. It is not clear how that capacity is calculated, using what inputs, and what the resulting "mode" is.

Claim Rejections - 35 USC § 102/103

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

8. Claims 1 and 10 rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over US 5,254,929 (Yang). Yang discloses an intermediate storage battery charging system comprising: a secondary battery (103), connected to loads (105-1...n), a control device (107) which "senses the residual electrical energy" in battery (103), rectifier (102) which charges battery (103) with power from the source (101), a control scheme for control device (107) which provides a signal of storage battery charge to the control device to control charging during certain peak/non-peak times (col. 3, l. 16-39). Thus all of the elements claimed in claim 1 are met

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by this reference including the method-type limitation of the last indented paragraph which properly belongs in a method claim. The rejection of claim 1 is made alternatively under 35 USC 103 primarily because claim 1 recites "load" and "power storage units" separately while elements 105-1...n are disclosed as "external batteries or other loads". It would have been obvious from the description that some of elements 105-1...n could be loads and others "power storage units" because the two are disclosed in the same breath as being equivalent for the purposes of the invention.

9. Claims 2 and 9 rejected under 35 U.S.C. § 103 as being unpatentable over Yang.

With respect to claim 2, Yang discloses a series of output controllers (104-1...n) which "may include any number of conventional battery charger optional devices, including ... adjustable voltage and or current control devices." Thus Yang contemplates controlling the charging of the terminal battery units (105-1...n) as well as the intermediate unit (103).

With respect to claim 9, Yang does not disclose what type of storage battery is contemplated, so one of ordinary skill in the art would have automatically assumed that the best known storage batteries were contemplated, such as Ni-Cd batteries.

10. Claims 7 and 8 rejected under 35 U.S.C. § 103 as being unpatentable over Yang as applied to claim 1 above, and further

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in view of US 4,583,034 (Martin). Martin discloses a computer programmed battery charge control system comprising: means to measure current in and out of a battery, computer means to calculate residual charge and display means (see claims 1 and 32). It would have been obvious to incorporate elements of the Martin computer control system into the control units (107, 104) of Yang because Yang generically discloses that the unit "senses the residual electrical energy already stored in the device" and one of ordinary skill in the art would have looked to systems known in the art (and more explicitly described in the art) for performing that function.

11. Claims 3-6, 11, 17-18 rejected under 35 U.S.C. § 103 as being unpatentable over US 5,254,929 (Yang) and US 3,445,744 (Henderson). Yang discloses the elements described in the rejection of claim 1 above: a secondary battery connected to a plurality of loads, a charger, a control unit and a detector.

The difference between claim 3 and Yang is that in Yang the charger/discharger is not controlled "on the basis of information from ... at least one of the loads or electric power [storage] units." Notwithstanding certain problems under 35 USC 112, this limitation implies a connection between the loads or storage units and the controller. In Yang, charging of the intermediate secondary battery (103) is controlled on the basis of information from the battery (103) and a preset timer; discharge of the

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intermediate secondary battery (103) is controlled by output controllers (104-1...n) on the basis of information from battery (103) and the loads or storage units (105-1...n). [Henderson discloses discharging a battery prior to recharging to eliminate memory effect. In general, it would have been obvious to control discharge of battery (103) because this known process of reconditioning is known to increase the life and capacity of a cell. In particular, it would have been obvious to employ the Henderson method of reconditioning, first connecting the battery to a resistive load and then to a constant current load prior to recharge because Henderson discloses that this provides an advantageous standard state from which to effect recharge.]

With respect to the limitation as to how the discharge is effected, several considerations should be noted. First, the method steps recited in claims 1-18 are not given significant weight because these are apparatus claim. There is caselaw to support this approach. For instance, Ex Parte Wikdahl 10 USPQ 2d 1546, 1548 (BPAI 1989), Ex Parte McCullough 7 USPQ 2d 1889, 1891 (BPAI 1988); In re Finsterwalder 168 USPQ 530 (CCPA 1971); In re Casey 152 USPQ 235, 238 (CCPA 1967). As far as the apparatus is concerned, the limitations of interest are the elements and, in particular, the signal line and how it interconnects the elements, not the particular threshold values or switching

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routine. Second, with the wording in claim 3, the discharge may be routed to the loads regardless of the residual current.

With respect to claim 17, the power supply is connected to the terminal loads or storage units as well as to the battery 103. That supply, at least, is responsive to the current demands of the loads.

12. Claims 12-16 and 19-33 rejected under 35 U.S.C. § 103 as being unpatentable over US 5,254,929 (Yang), US 3,445,744 (Henderson) and US 4,583,034 (Martin). Insofar as these claims reiterate limitations expressed in earlier claims, the references are applied against these claims in identical fashion. Yang discloses an intermediate storage battery charging system comprising: a secondary battery (103), connected to loads (105-1...n), a control device (107) which "senses the residual electrical energy" in battery (103), rectifier (102) which charges battery (103) with power from the source (101), a control scheme for control device (107) which provides a signal of storage battery charge to the control device to control charging during certain peak/non-peak times (col. 3, l. 16-39). Henderson discloses discharge control and associated elements. It would have been obvious to combine Henderson with Yang because it is known to discharge a battery prior to recharging to prolong battery life. Martin discloses a computerized control with display. It would have been obvious to incorporate these

elements into the combined Yang/Henderson device because this would automate the processes or make the control scheme more user friendly. It is well known (and expressed in all of the references to some degree) to measure battery parameters such as temperature, and to calculate charge efficiency as recited in the dependent claims.

Yang does not show a signal connection between the loads and the charger controller (107). However, the loads are powered by both battery 103 and power source/rectifier (101, 102), therefore it would have been obvious or necessary to relay information regarding at least the current demand to element (107) to determine whether the loads could be supplied by the power source, the battery or both. With respect to the discharging routine, Henderson discloses a higher voltage threshold at which the battery is discharged through a resistive load and a lower threshold at which the battery is discharged through a constant current load.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 4,575,679 (Chung) and US 4,564,798 (Young) have disclosure pertinent to the general level of skill in the art regarding measuring and calculating battery parameters in the context of battery recharging.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brendan

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Mee between 8:00 a.m. and 5:00 p.m. Mon.-Fri. The direct dial telephone number is (703) 308-3331. The group fax number is (703) 305-3599.

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August 16, 1995

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